

which are adjacent to such enveloping layer, enveloped fiber, lined cell or pore wall, or the like.

The term "elastomeric" as used herein refers to the ability of a cured polymer treated web to stretch and return to its original state.

The term "curing", or "cure", as used herein, refers to a change in state, condition, and/or structure in a material, 5 such as a curable polymer composition that is usually, but not necessarily, induced by at least one applied variable, such as time, temperature, radiation, presence and quantity in such material of a curing catalyst or curing accelerator, or the like. The term "curing" or "cured" covers partial as well as complete curing. In the occurrence of curing in any case, such as the curing of such a polymer composition that has been selectively placed into a porous flexible substrate or web, the components of such a composition may experience occurrence of one or 10 more of complete or partial (a) polymerization, (b) cross-linking, or (c) other reaction, depending upon the nature of the composition being cured, application variables, and presumably other factors. It is to be understood that the present invention includes polymers that are not cured after application or are only partially cured after application.

The term "filled" as used herein in relation to interstices, or interstitial spaces, or open cells, and to the amount 15 of polymer composition therein in a given web, substrate, or the fibers in such web or substrate, designates the presence of such composition therein. When a given interstitial space or open cell is totally taken up by such composition, it is "completely filled" or "plugged". The term "filled" also refers to an interstitial space having a film or layer of polymer composition over or through it so that it is closed even though the entire thickness of the interstitial space is not completely filled or plugged.

20 Measurements of the degree of envelopment, interstitial fillage, plugging, or the like in an internal coating are conveniently made by microscopy, or preferably by conventional scanning electron microscopy (SEM) techniques. Because of the nature of such measuring by SEM for purposes of the present invention, "a completely filled" interstitial space or open cell can be regarded as a "plugged" interstitial space or open cell.

The term "polymer", or "polymeric" as used herein, refers to monomers and oligomers as well as polymers and 25 polymeric compositions, and mixtures thereof, to the extent that such compositions and mixtures are curable and shear thinnable.

The term "shear thinning", in its broadest sense, means the lowering of the viscosity of a material by the application of energy thereto.

A porous web or fabric is preferably untreated or scoured before being treated in accordance with the present 30 invention. Preferably a web can be preliminarily treated, preferably saturated, for example, by padding, to

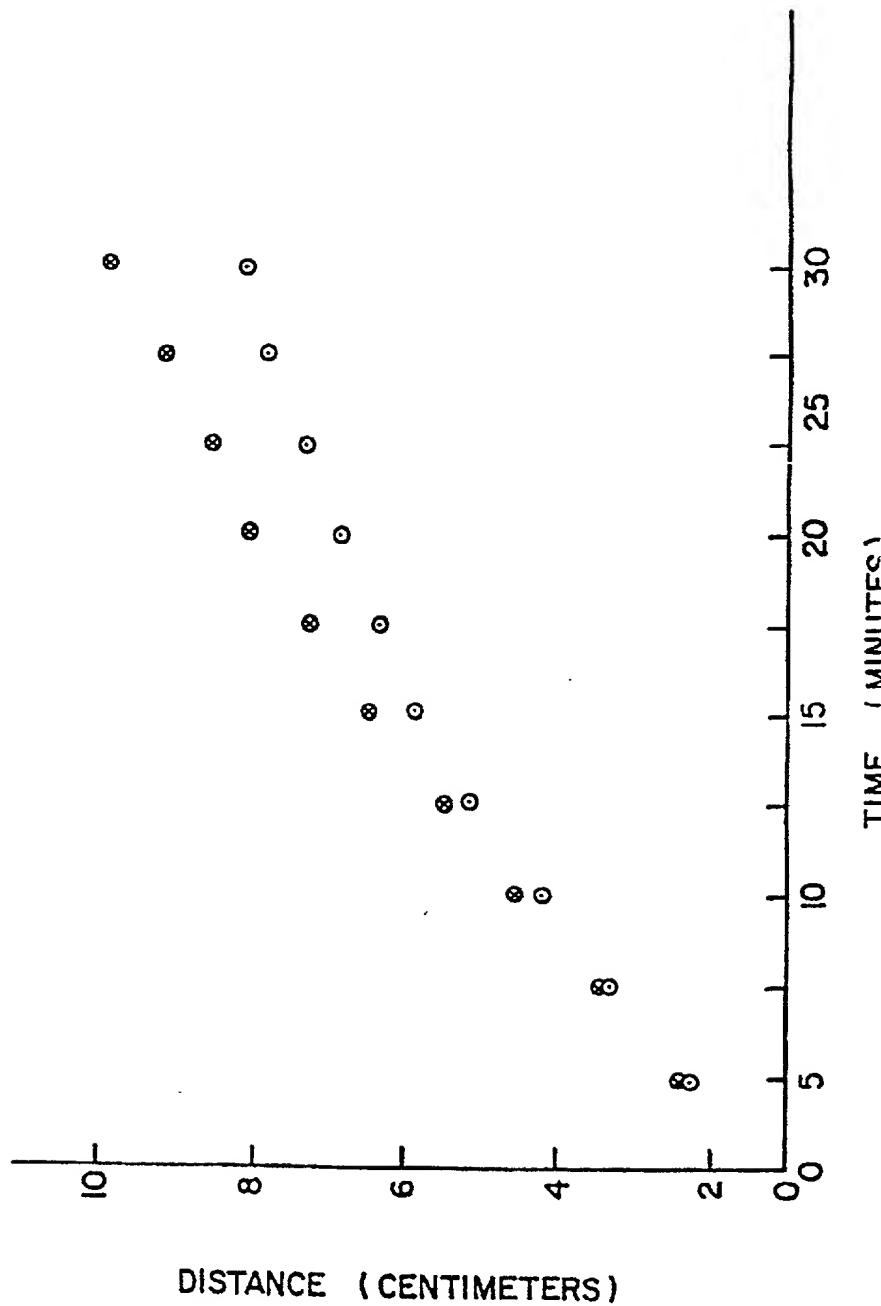


FIG. 1

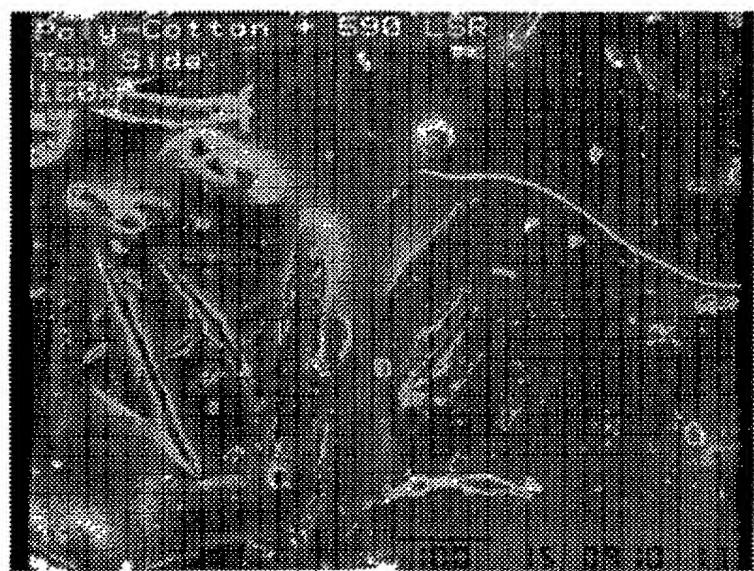


FIG. 2

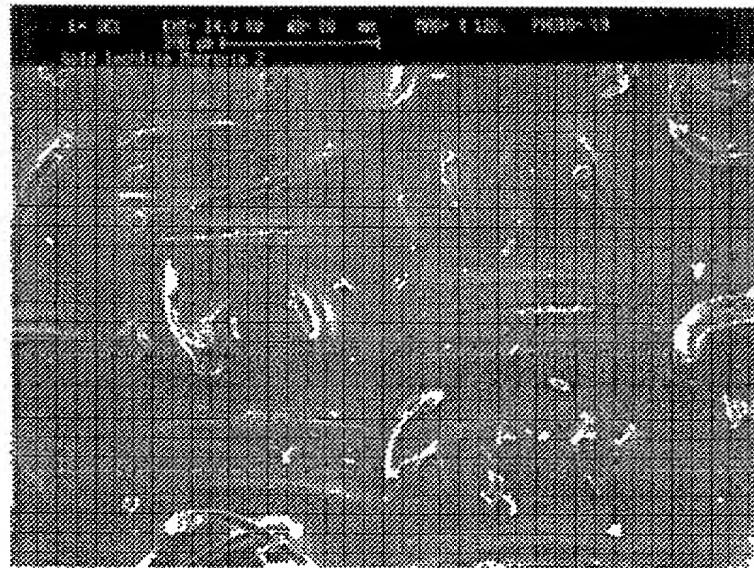


FIG. 3a

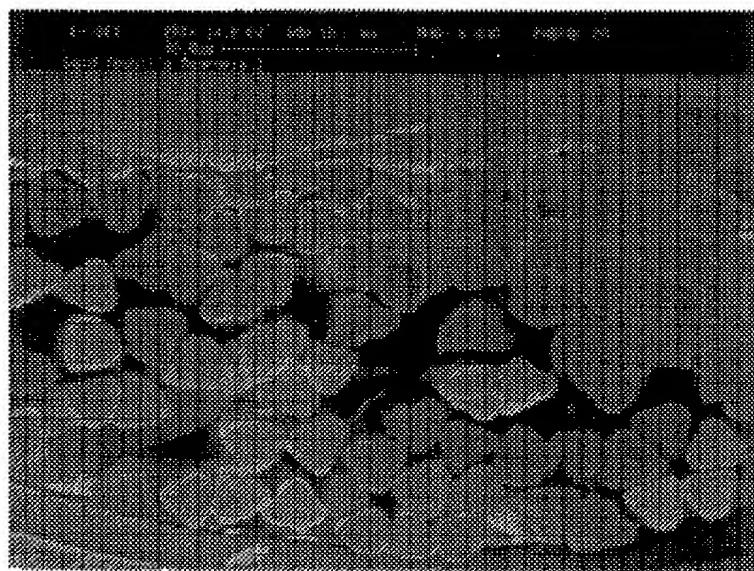


FIG. 3b

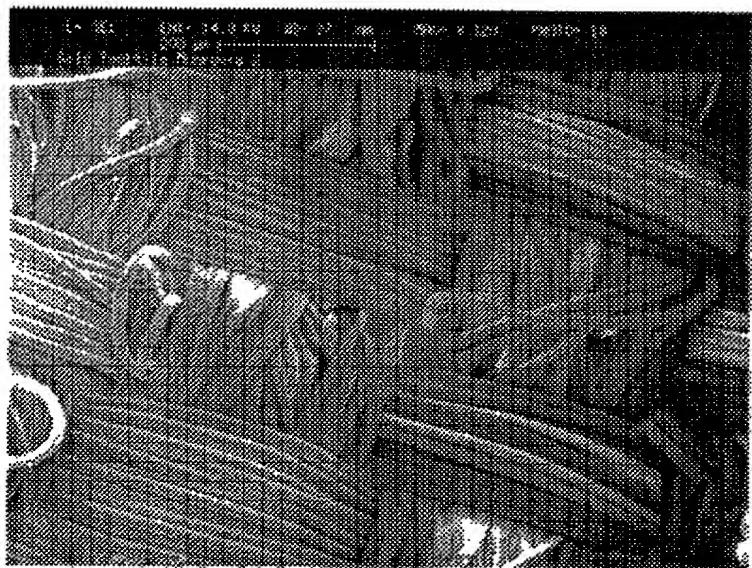


FIG. 3c

FIG. 4a

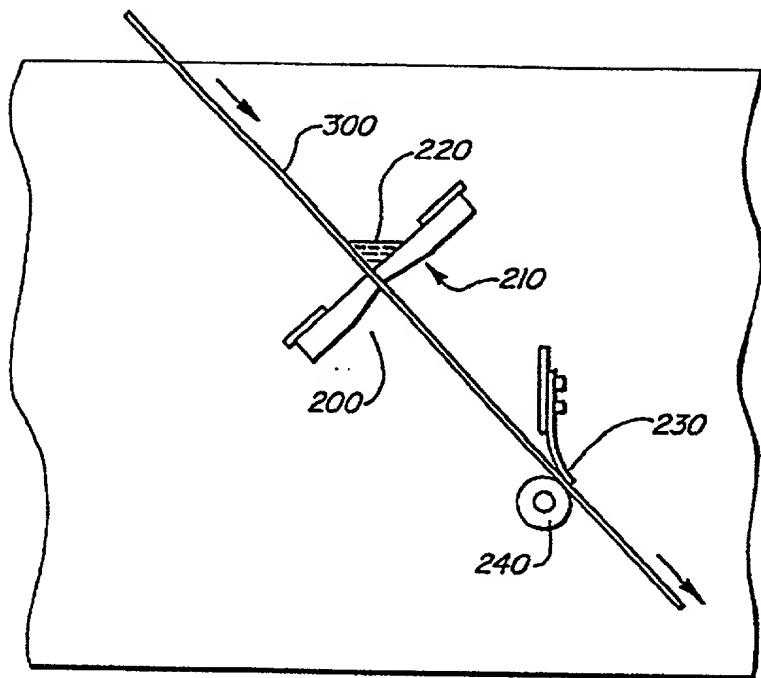
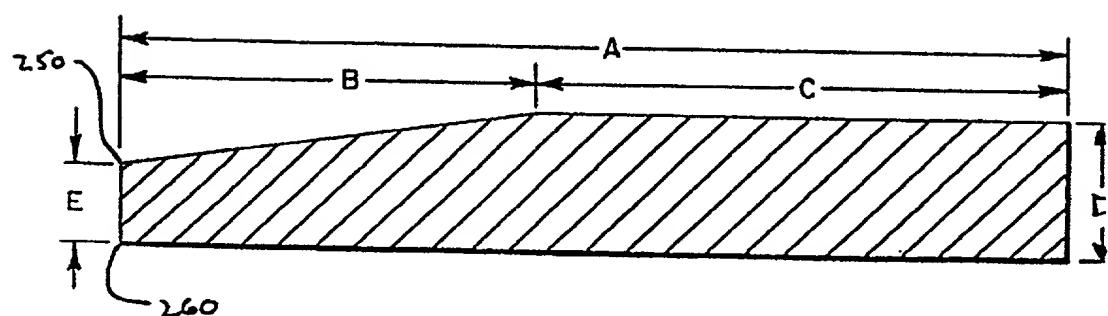


FIG. 4b



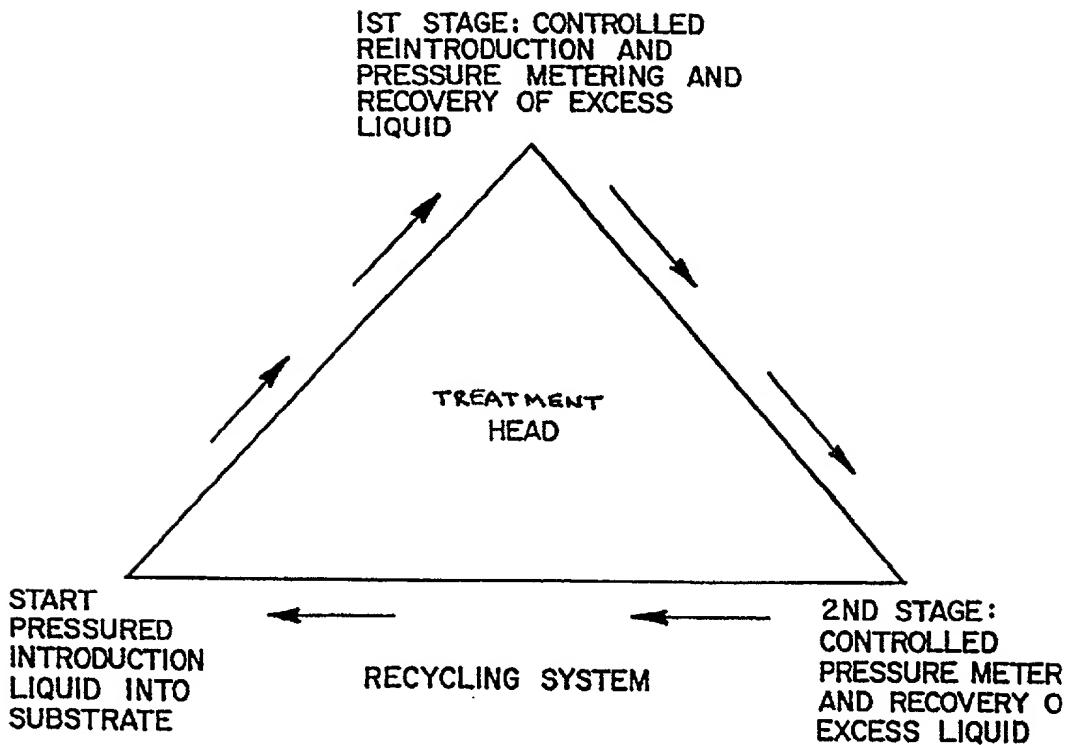


FIG. 5

FIG. 6

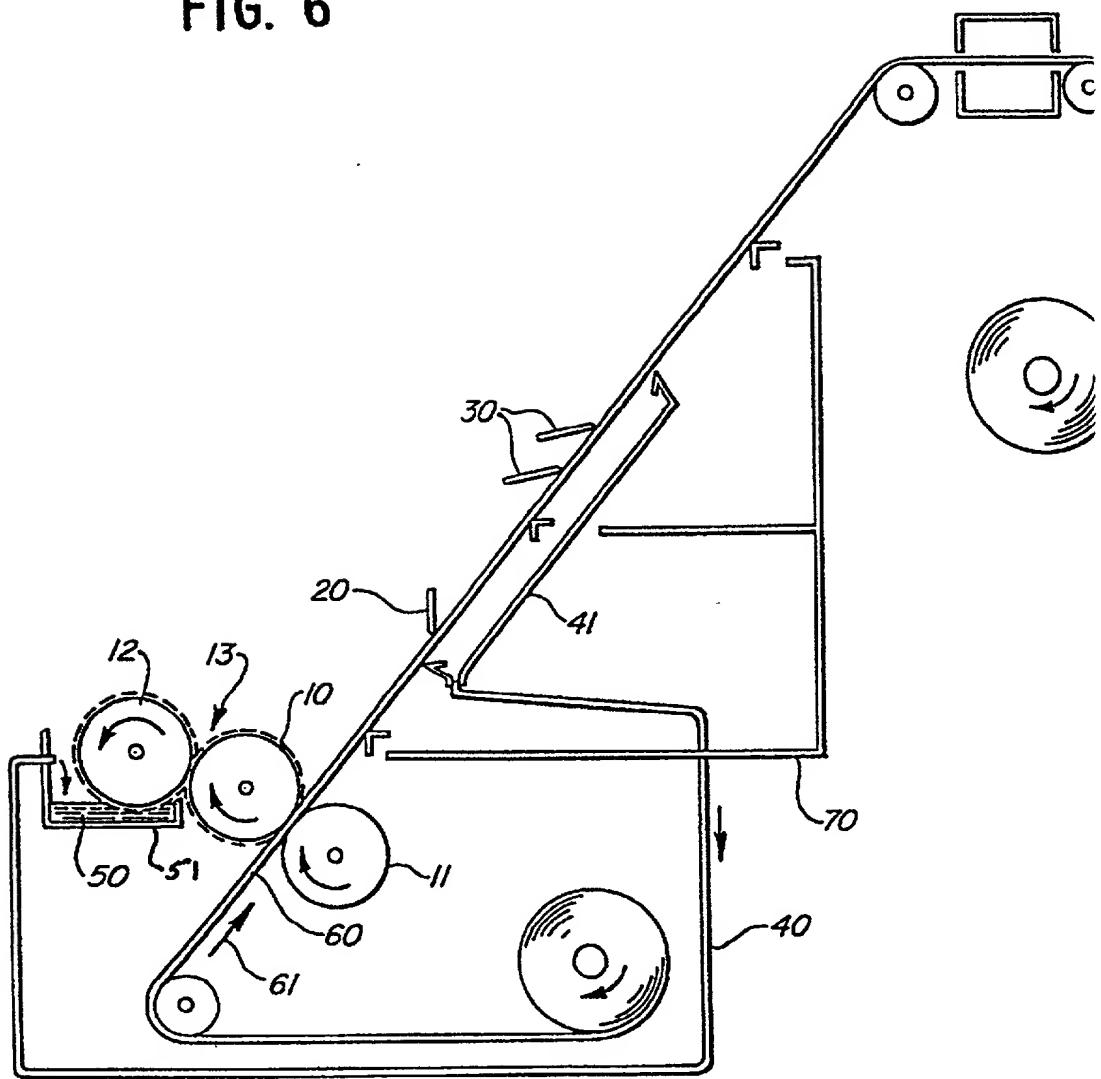


FIG. 7

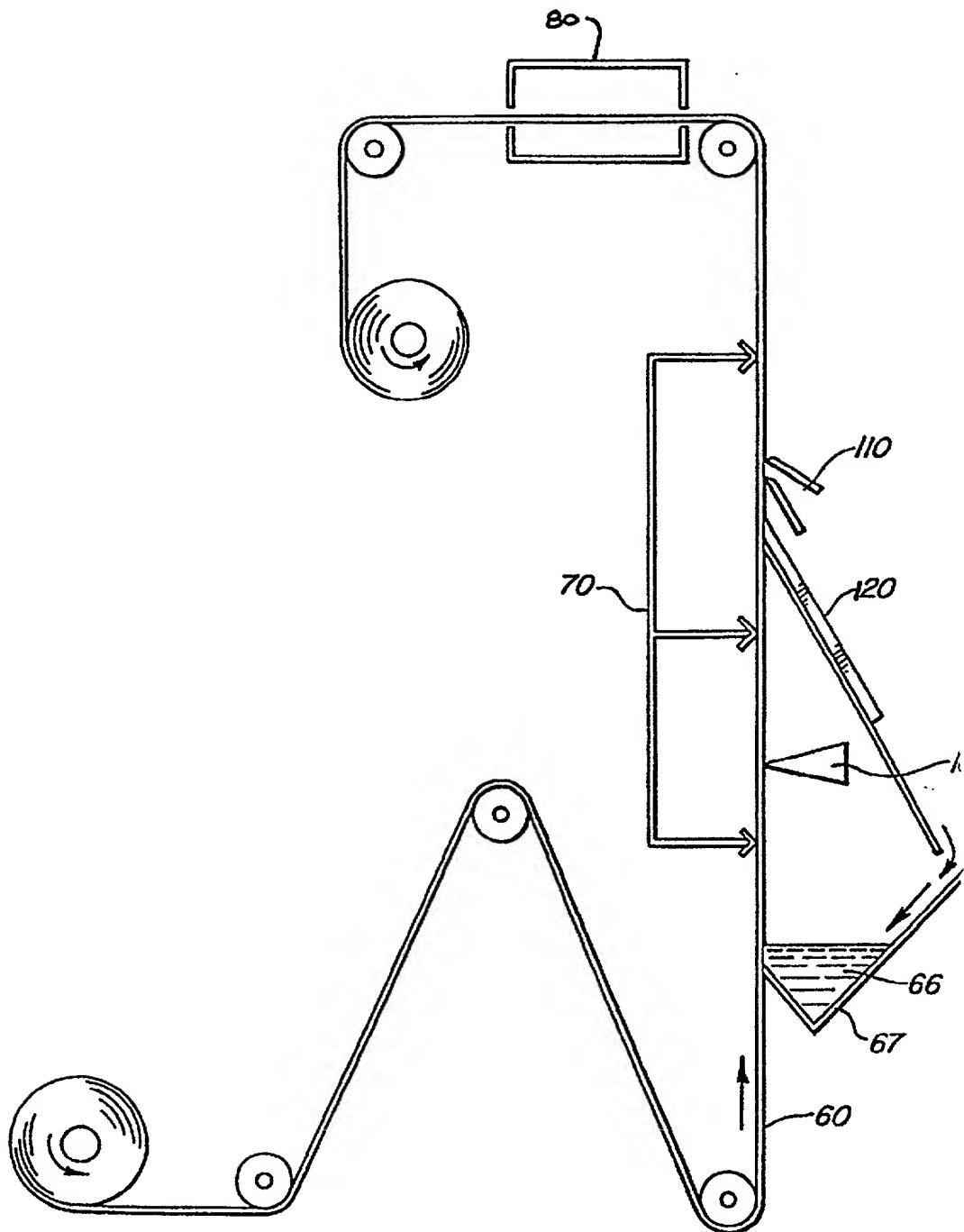


FIG. 8a PRIOR ART

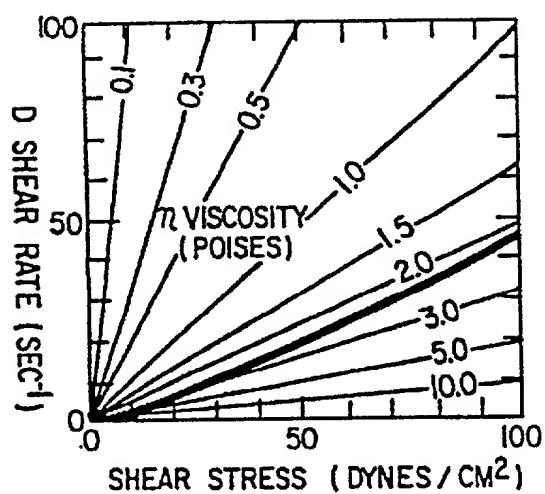


FIG. 8b PRIOR ART

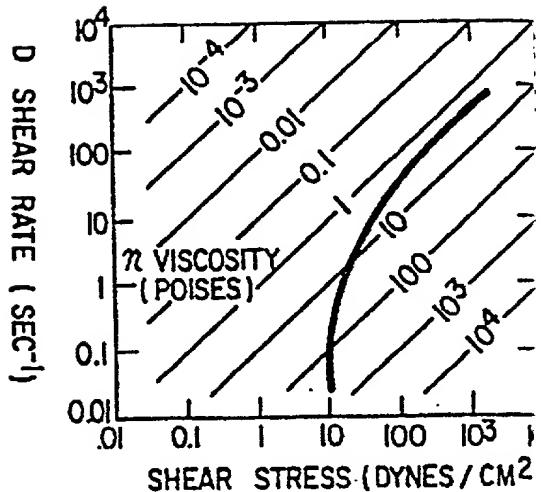


FIG. 8c PRIOR ART

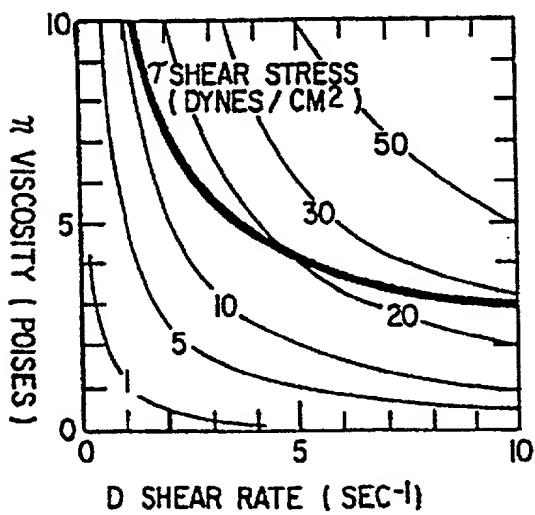


FIG. 8d PRIOR ART

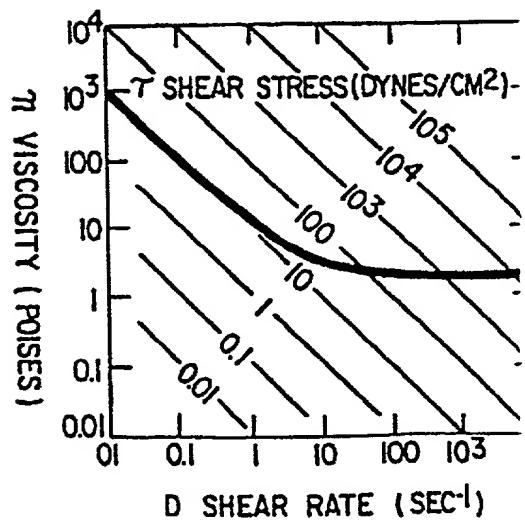


FIG. 9 PRIOR ART

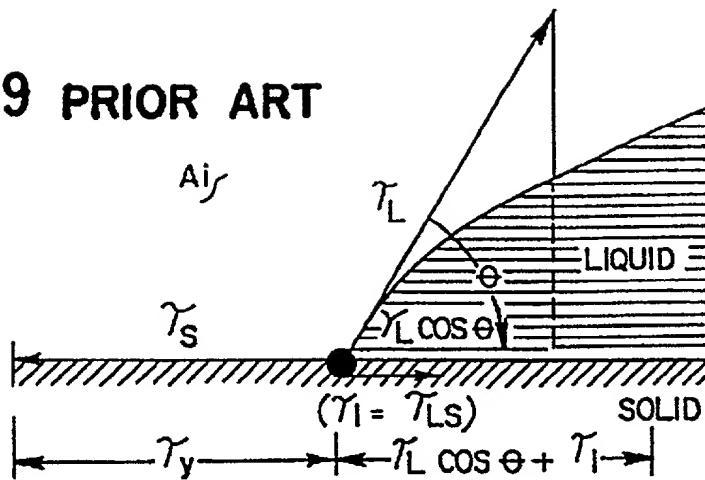
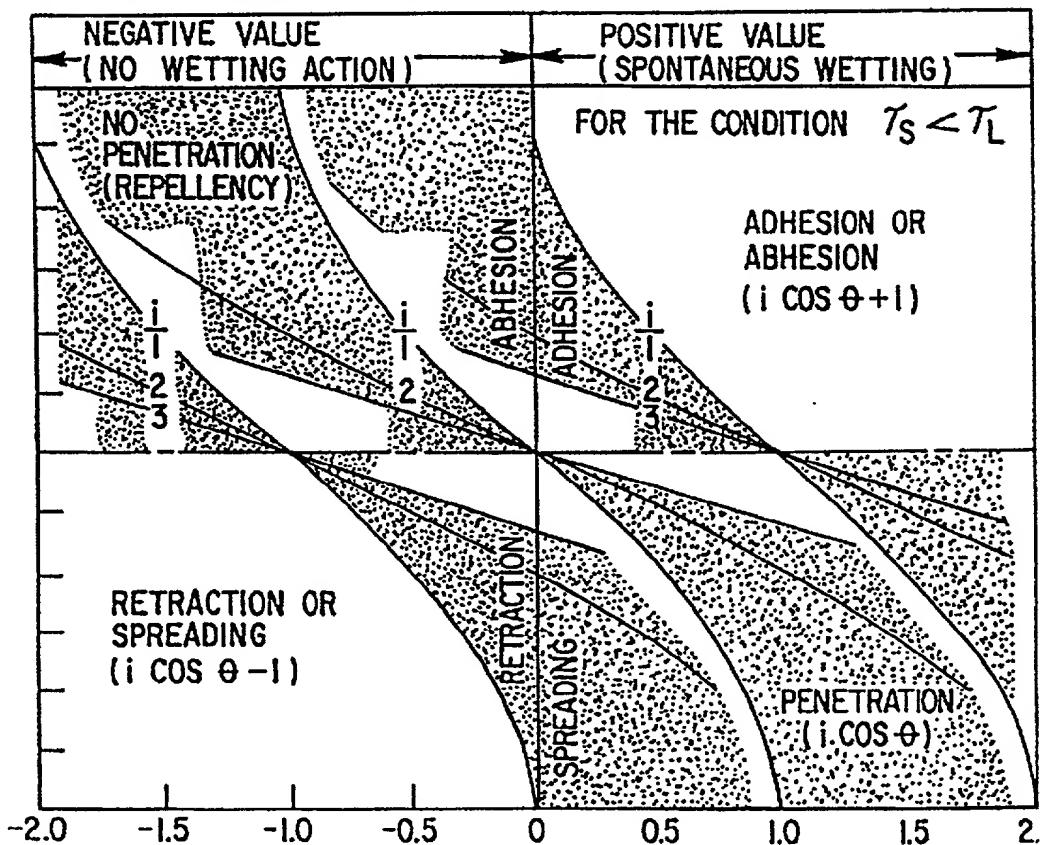


FIG. 10 PRIOR ART



FUNCTION OF θ AND i AS INDICATED ON DIAGRAM FOR
ADHESION, PENETRATION, AND SPREADING, RESPECTIVELY

FIG. IIa PRIOR ART

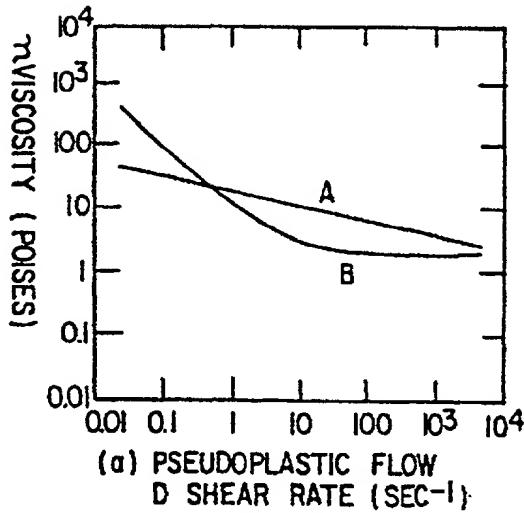


FIG. IIb PRIOR ART

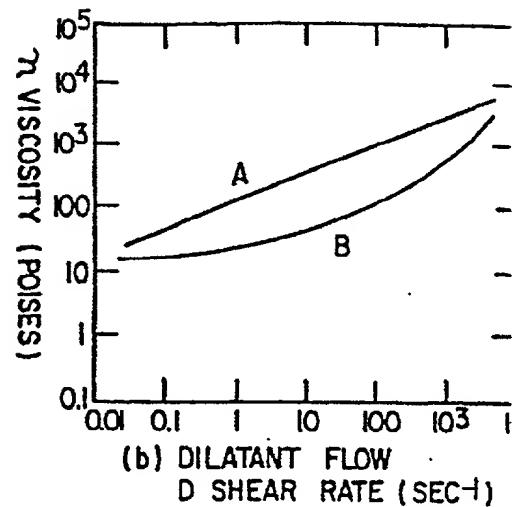


FIG. IIc PRIOR ART

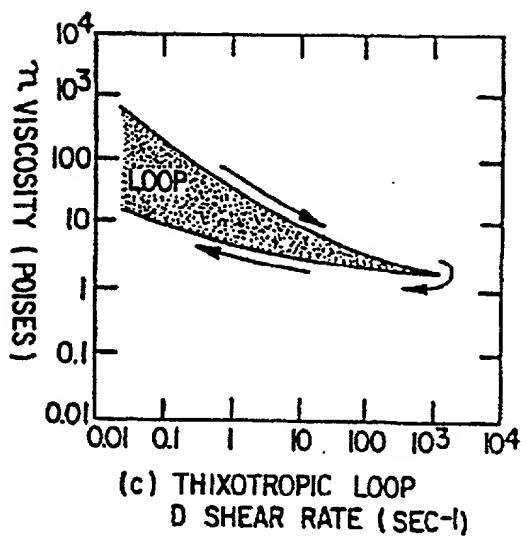


FIG. II^d PRIOR ART

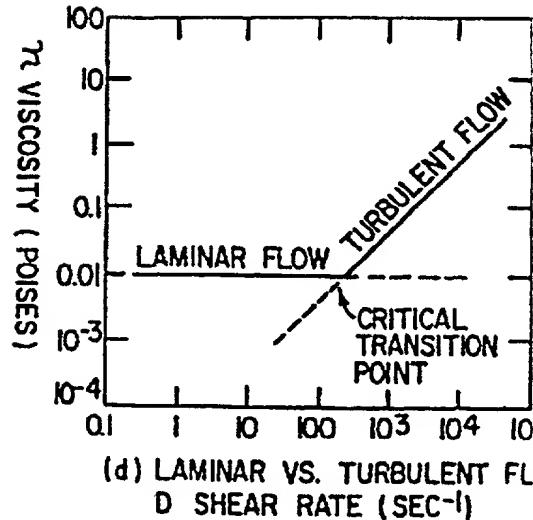


FIG. 12a

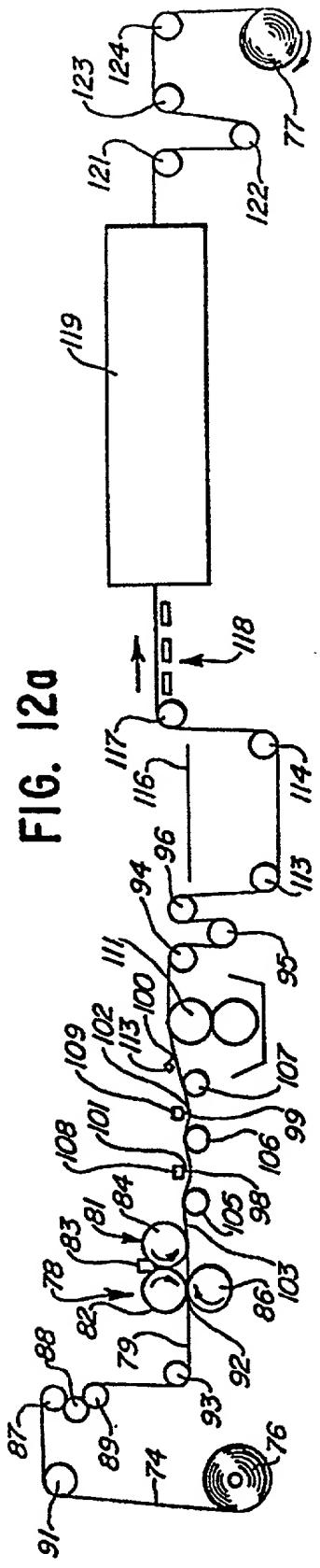


FIG. 12b

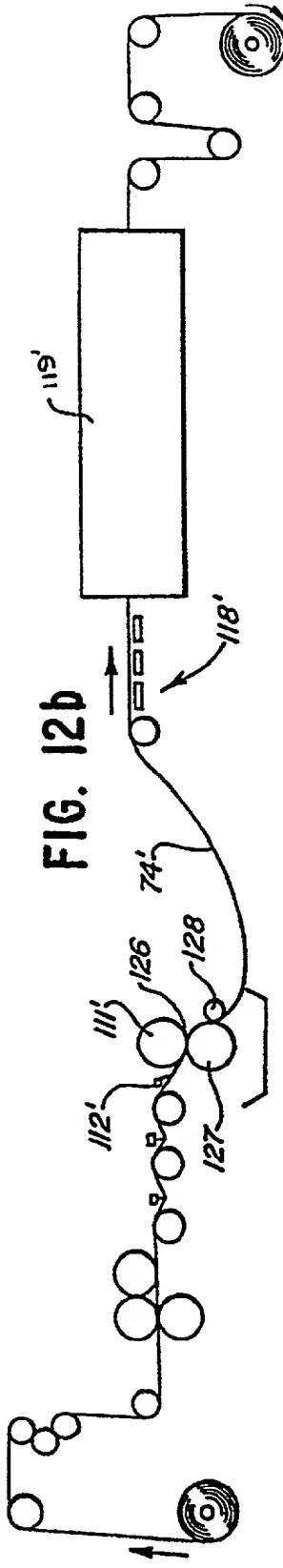
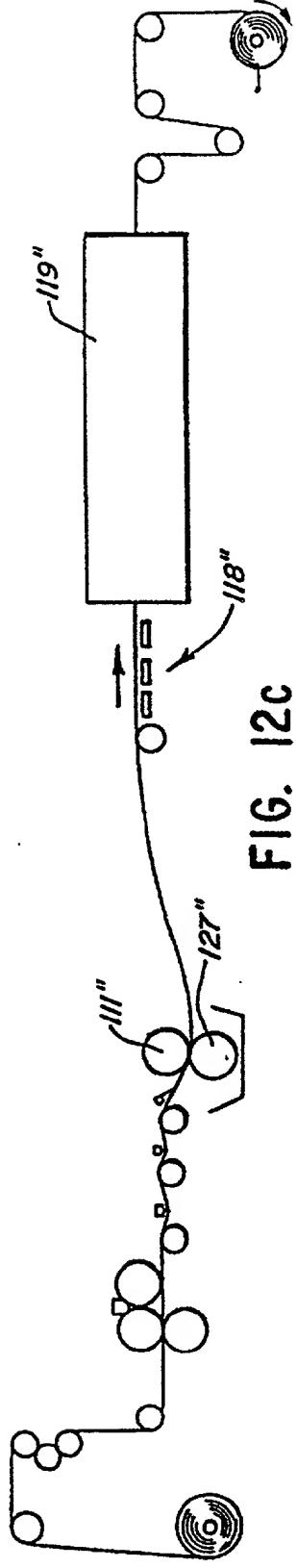


FIG. 12c



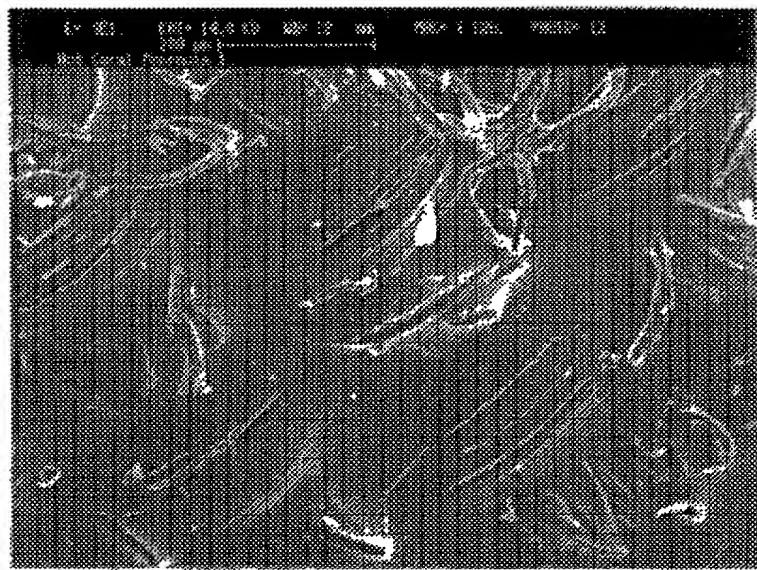


FIG. 13a

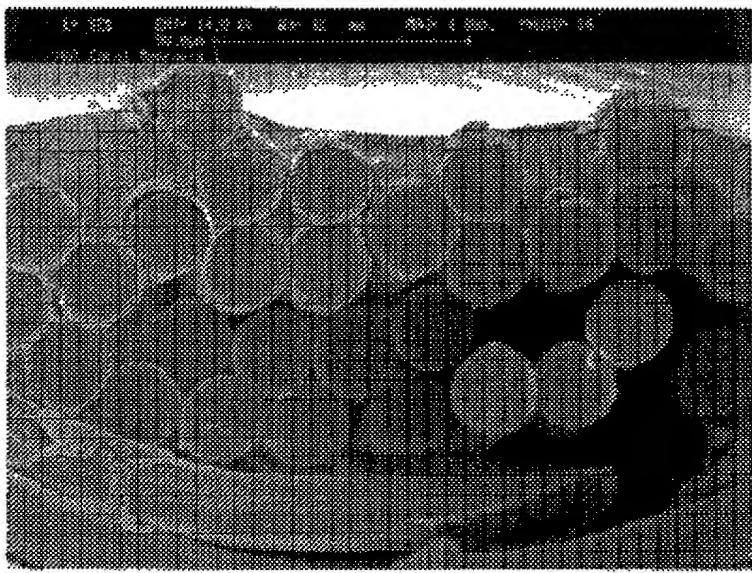


FIG. 13b

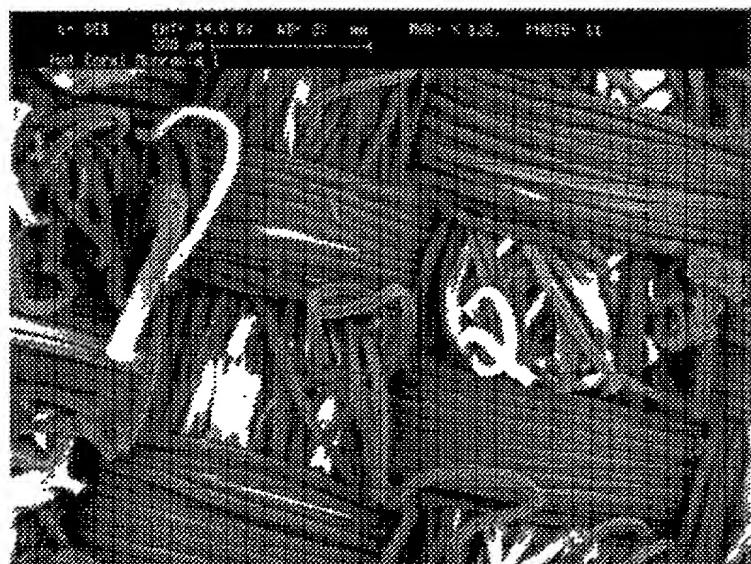


FIG. 13c

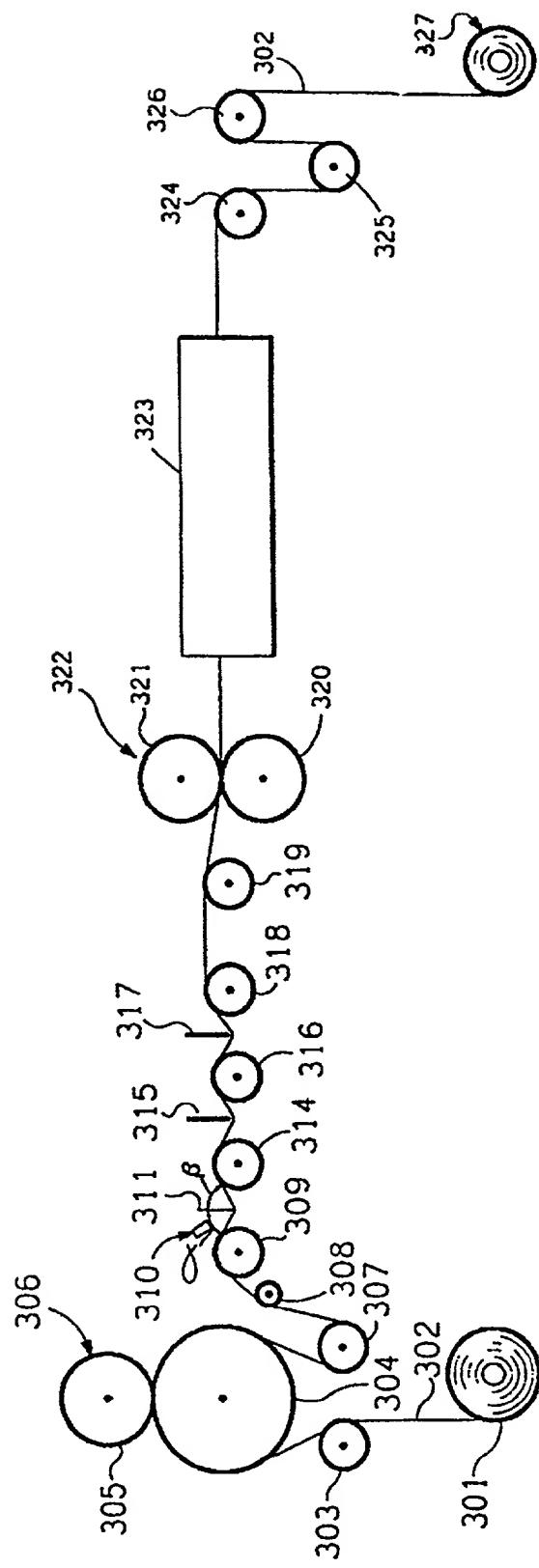


FIG. 14

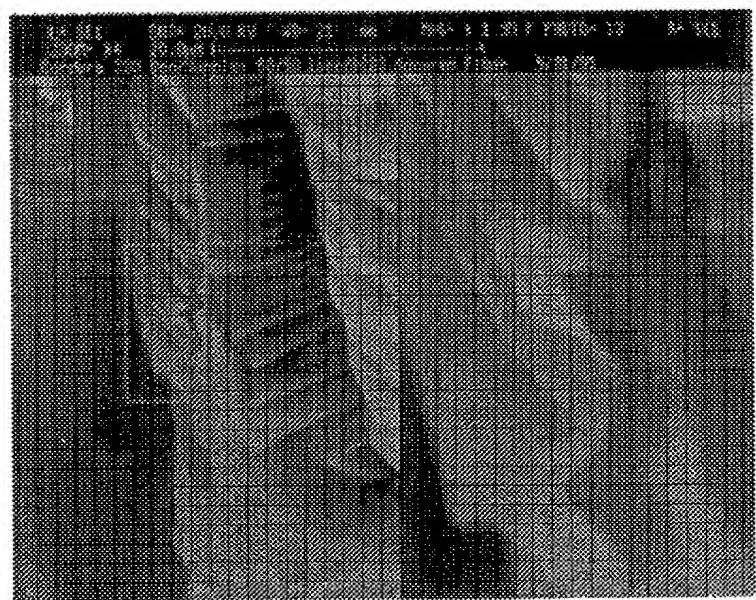


FIG. 15a

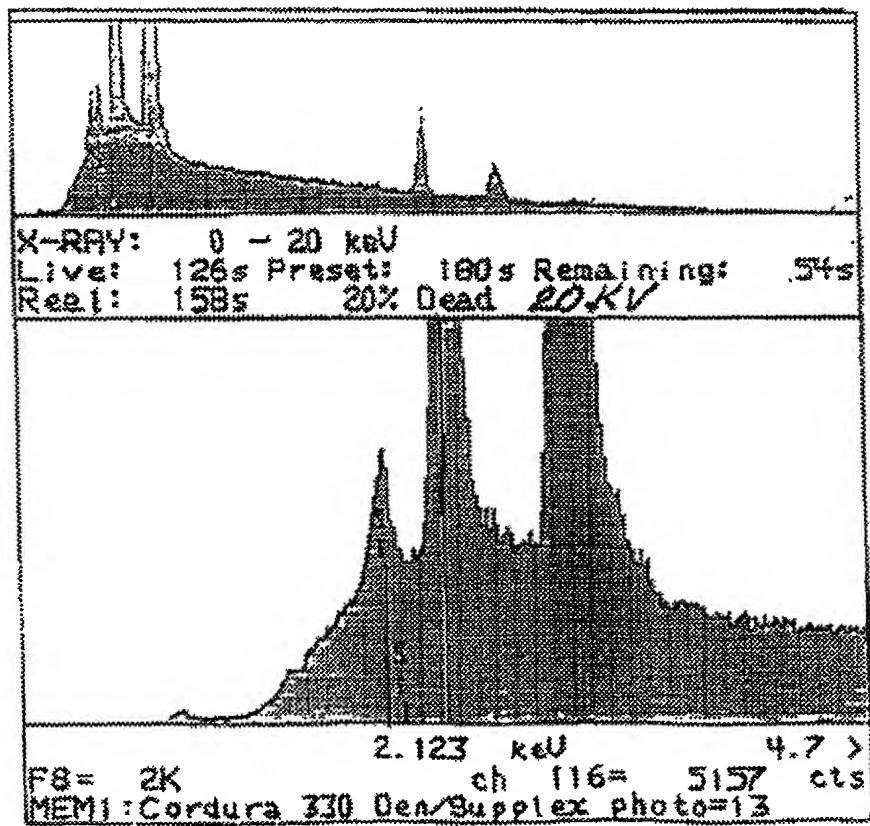


FIG. 15b

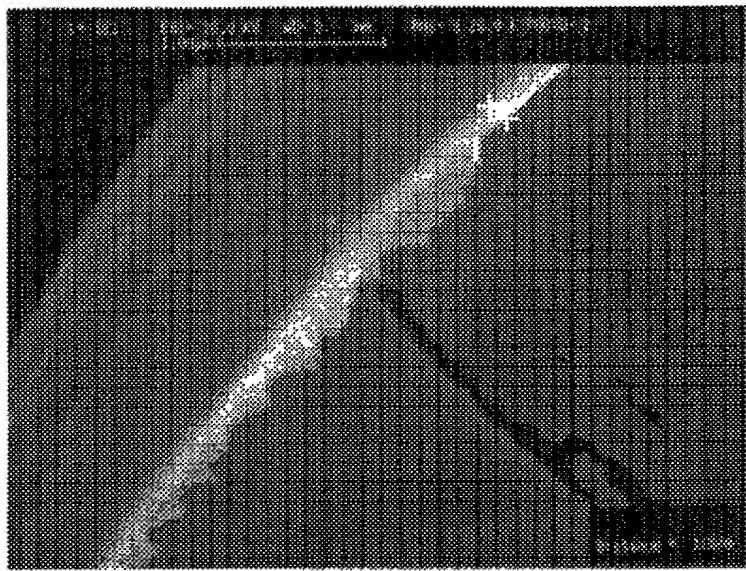


FIG. 15c

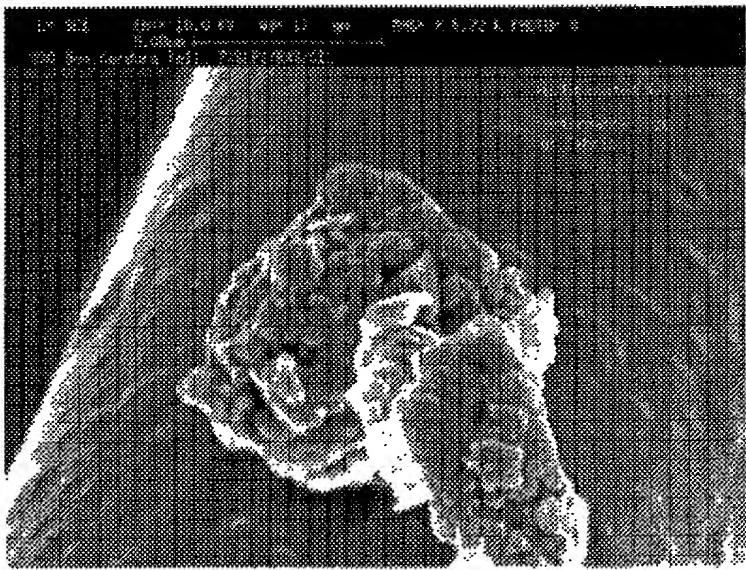


FIG. 15d

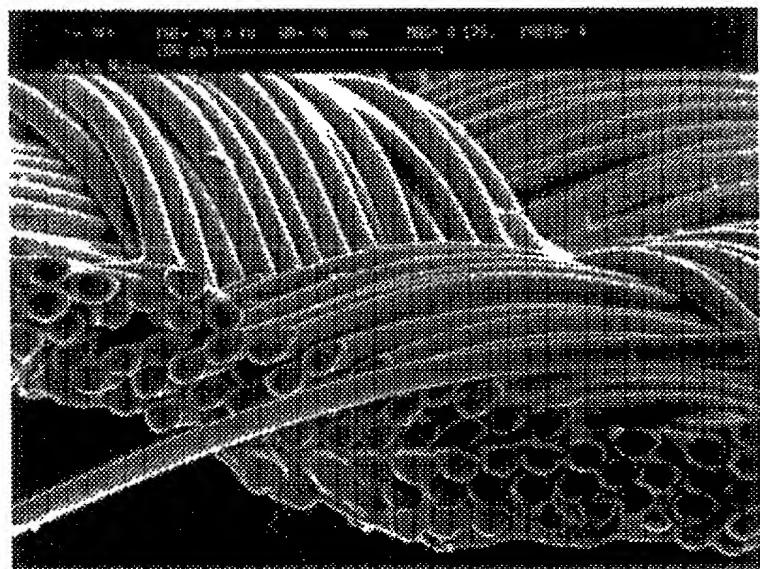


FIG. 15e

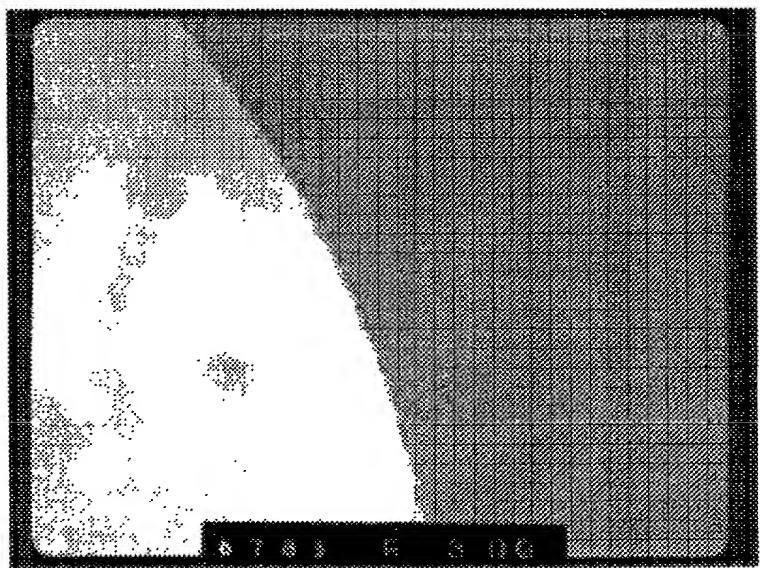


FIG. 15f

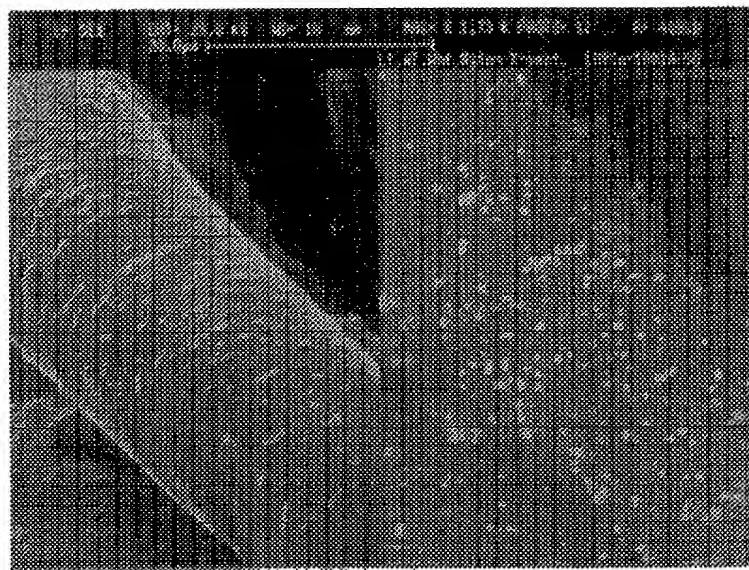


FIG. 15g

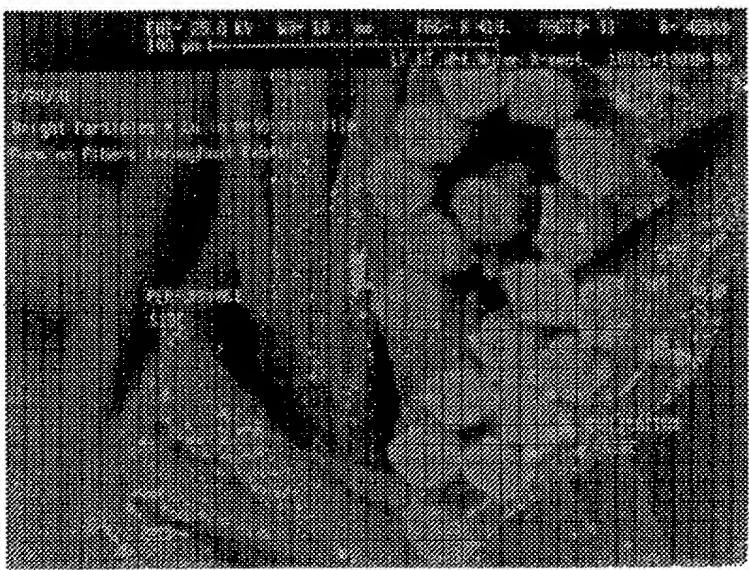


FIG. 15h

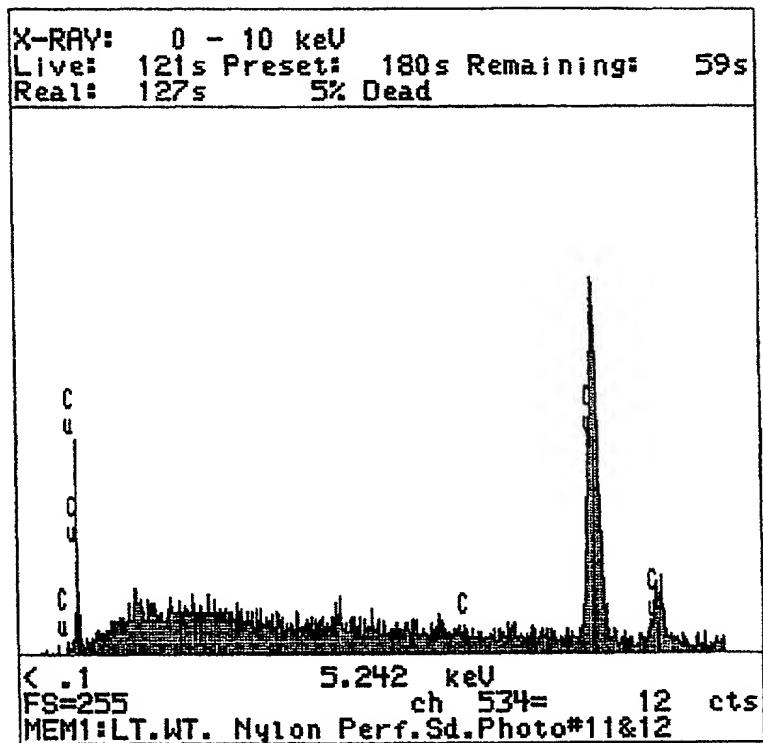
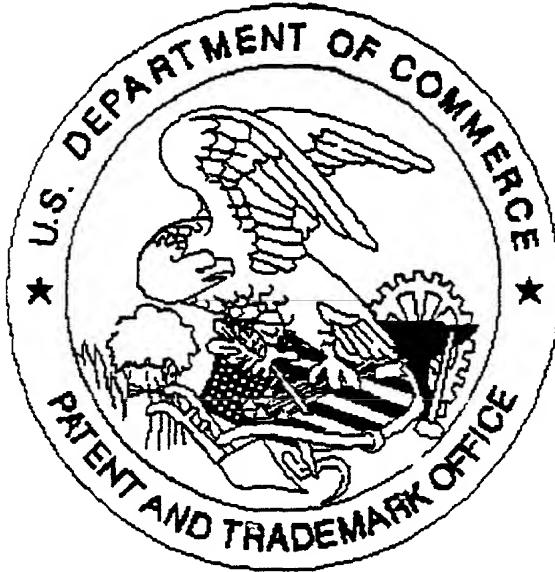


FIG. 15i

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